

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***PERMIT STATEMENT OF BASIS***

Title V Draft No. V-01-019  
CENTURY ALUMINUM OF KENTUCKY, LLC  
HAWESVILLE, KY.  
January 20, 2003  
APRIL J. WEBB

**SOURCE DESCRIPTION:**

Century Aluminum of Kentucky LLC (Century Aluminum), operates a primary aluminum reduction plant (SIC 3353) that produces primary aluminum from the electrolytic reduction of aluminum oxide (alumina). Alumina is reduced to aluminum in cells or pots. These pots are constructed of carbon steel cells with removable hoods on top of the cells. The individual pots are arranged in series to form a potline. There are currently five (5) potlines in operation at Century Aluminum.

To facilitate the electrolytic reduction of the alumina to aluminum, prebaked carbon blocks or anodes are suspended from the superstructure above the pot and then lowered into the molten bath. The pot is lined with carbon blocks which act as the cathode and complete the electrical circuit. Alumina is added down the center line of the pot in between two rows of anodes that run parallel to each other. The pots operate at about 950 degrees C and the alumina is reduced by the heat generated by the electrolytic reaction.

Cyrolite is used as the electrolyte or catalyst for the reaction. Other fluoride containing materials are also added to the molten bath to improve the efficiency of the reaction. Molten aluminum sinks to the bottom of the cell and is drawn off periodically into crucibles for transport to another portion of the plant.

Molten aluminum is further processed in holding furnaces in the cast house. In this process, the aluminum is cleaned by fluxing or degassing, alloyed and cast into ingot, sow or billet.

Century Aluminum also operates as an integral portion of the facility a carbon plant. This process produces the anodes used in the pots. In this process, green anodes are formed by mixing coke, pitch and recycled materials into a paste. The anodes are then formed by a vibrating press. Green anodes are then cured or baked in one of three ring ovens. Once the anodes are baked, they are ready for use in the pots.

**COMMENTS:**

**General:**

Each limitation and condition specified in the permit or in any table shall be enforced separately unless otherwise stated as a combined limit.

Compliance with throughput limitations of raw materials provides reasonable assurance that limits set forth, for paved and unpaved road will be met. Therefore, no specific operational limits are being added for the roads at this time. It is assumed that the plant road's emissions will be restricted by the plant production, material and equipment

operational limits.

Certain emission levels are based on AP42 emission factors and self-imposed operationing limits. Performance tests to prove AP42 emission factors for small emission units are not normally conducted, for economical reasons, unless the estimated emissions are questionable.

The alternative emission limitation for gaseous fluorides specified in Section 4(c) of Regulation 401 KAR 61:165, Existing primary aluminum reduction plants, has not been included in the permit due to the lack of documentation to support that the alternative emission limitation has been allowed in the USEPA approved SIP. Compliance with fluorides standards specified in Appendix A shall be determined with the ambient monitoring specified in the permit and in Regulation 401 KAR 61:165.

There are two (2)-existing and one (1)-new carbon bake furnaces that are considered to be one affected source because all the furnaces are controlled by a common control device.

### **PSD and self-imposed concerns :**

Self-imposed net emission limitations are assured through stipulated process operation limitations.

Exceedance of listed emission limits may require reopening of this permit and a case by case determination of PSD significant net emission rates. Net increases and decreases associated with F-96-024 (Revision 5) including creditable contemporaneous increases and decreases shall be included in the determination. Exceedance of a PSD threshold limit, prior to the issuance of the required permit, will constitute a violation.

Exceedance of the coke and pitch sulfur content limits may require ambient modeling to demonstrate compliance with the NAAQS short term SO<sub>2</sub> limits.

### **PSD Contemporaneous Increases:**

The cast iron melting furnace (oxy-fuel) emissions are included as contemporaneous increases as well as the Southwire Rod Mill melt furnace #3, holding furnaces #3 and #4, 2 melt/hold furnaces constructed in 1997, and the shaft melt furnace. For PSD purposes Southwire is considered to be a part of Century; therefore, increases at one plant must be considered at the other for PSD regulations.

The carbon bake's creditable reduction has been based on the emission factor derived from the performance test and the existing carbon bake furnaces' two year average throughput as reported in the KYEIS for the baseline years 1993 and 1994.

### **NOx Emissions:**

The performance tests will verify the amount of NOx emitted per unit of natural gas consumed. Thus allowing the calculation of an appropriate emission factor. Because propane is rarely used no performance test is being required. [If the performance tests for the carbon bake ovens reveal higher emission factors than were originally assumed, the fuel usage rates shall be adjusted and/or a PSD review will be required]. Any adjustment to the fuel usage rates will be processed in accordance with 401 KAR 52:020. [Aluminum flux and melt furnaces have self-imposed fuel usage limits to limit the NOx contribution to the increases associated with the construction of potline 5]. All of the new carbon bake furnace's NOx emissions are included in the increases while all other emission units have both baseline emissions and increases associated with the construction. Records of the type and amount of fuel, other furnace settings in conjunction with the required stack test will provide reasonable assurance that limits are being met. The emission factor in mmcf of natural gas as permitted in F-96-024 (Revision 5) for the carbon bake furnace, will be replaced by a number determined during the stack test conducted for this furnace (emission point 09). If a larger variations of NOx emissions are noted during the performance test, additional monitoring may be required. Such additional requirements will be added to the permit as specified in 401 KAR 52:020. The emission factors derived from the required performance test shall be used to estimate the NOx emissions. Emission factors will be replaced with the factors derived during the performance tests. Self-imposed limits will need to be adjusted and/or the issuance of a PSD permit if the emission factors are different.

**EMISSION AND OPERATING CAPS DESCRIPTION:**
**TABLE 1: NEW & MODIFIED EMISSION UNITS:**

Emission Point	Emission Unit	EMISSIONS LIMITATIONS			Pollutant	Process operational limits units/month	General Conditions record keeping & compliance	Regulatory Authority
		Lbs/hr	TPY	Lbs/unit <sup>1</sup>				
09(09)	Carbon baking	164.3	719.7	2112.43	CO	56 MMCF natural gas + pitch and pet coke (existing)	40	BACT
		55.69	243.9			19 MMCF natural gas + pitch and pet coke (new)		
		0.64	2.78	0.0200	HF	23,167 tons of aluminum		60:190
		0.064	0.28	0.002	Part. Fluoride	23,167 tons of aluminum		BACT
		3.16	13.83		PM <sub>10</sub> <sup>2</sup>	18,083 tons of green anode 7,844 tons of packing coke		SelfImposed
			120.43 40.01 6.41	353.51	NO <sub>x</sub>	56 MMCF natural gas (existing) 19 MMCF natural gas (new) 56.25 Mgallons propane		SelfImposed
		118.17	517.6	5.000	SO <sub>2</sub> <sup>2</sup>	18,083 tons of green anode & General Condition # 33		BACT
		4.33	18.96	0.175	VOC <sup>2</sup>	18,083 tons of green anode		BACT
P5 (37)	Potline 5	2643	11576.34	350.55	CO	5,500 tons of aluminum	41	BACT
		9.04	39.60	1.200	TF	5,500 tons of aluminum		SelfImposed & 60:190
		31.5	137.97		PM <sub>10</sub>	5,500 tons of aluminum		SelfImposed
		7.44 <sup>3</sup> 364.52 <sup>4</sup>	32.57 <sup>3</sup> 1596.604 <sup>4</sup>	49.356	SO <sub>2</sub>	5,500 tons of aluminum		BACT/NAAQS
		8.29	36.30	1.100	VOC	5,500 tons of aluminum		BACT
38(38)	6 Alumina storage facilities	0.0597 <sup>5</sup>	0.2610	0.00116	PM <sub>10</sub>	37,500 tons of alumina	42	SelfImposed
39(39)	Alumina handling system	0.32 <sup>5</sup>	1.41	0.014	PM <sub>10</sub>	16,792 tons of alumina	42	SelfImposed
40(40)	Ballmill	0.26 <sup>5</sup>	1.14	0.0174	PM <sub>10</sub>	10,950 tons of coke/pitch	42	SelfImposed
PR(-)	0.4 mile plant road	0.42 2.15	1.84 9.23	NA	PM <sub>10</sub> PM		43	SelfImposed
42(-)	Cooling tower	0.29	1.25	NA	PM <sub>10</sub>		43	SelfImposed

1. Pounds per unit refers to the unit listed in the process operations limits column. 2. Pounds per hour and tons per year limitations include products of combustion. The pounds per unit do not. Self-imposed are regulatory limitations that the source requested to either avoid triggering a PSD threshold or to make a decrease and/or control equipment federally enforceable. Regulation 401 KAR 60:190 is the same as 40 CFR 60, Subpart S. Annual emission limitation shall be based on 12 consecutive months, monthly limitations shall be based on 30 consecutive days. Gaseous and particulate fluoride limitations may be added and measured as total fluoride. 3. Roof monitors. 4. Stack 5. As required by 59:010 and represents a one month average. 6. Each limitation and condition shall be enforced separately. 7. PM<sub>10</sub> represents total particulates unless specified differently.

**TABLE 2:**

<i>Emission point</i>	<i>Emission unit</i>	OPACITY	Process operational limits unit/month
01	Vacuum Unload	<20%	146,000 tons of coke
02	RR Unload	<20%	146,000 tons of $AlF_3$
03	Convey Coke	<20%	146,000 tons of coke
04	Convey $Al_2O_3$ , Coke	<20%	146,000 tons of alumina
06	Conveyor to Coke Silos	<20%	146,000 tons of coke
07	Green Carbon Crushing/Screening (Fines)	<20%	7,300 tons of coke
08	Green Carbon Paste Production	<20%	18,250 tons of coke/pitch
	Green Carbon Roll Crusher (Paste Production)	<20%	18,250 tons of coke/pitch
	Green Carbon Bucket Elevator (Paste Production)	<20%	18,250 tons of coke/pitch
	Green Carbon Handling (Paste Production)	<20%	18,250 tons of coke/pitch
10	100 Ton Silo Pack Coke	<20%	234.3 tons of fluid coke
11	Baked Anode Cleaning	<20%	234.3 tons of fluid coke
12	Packed Coke Waste (20 T Silo)	<20%	234.3 tons of fluid coke
14	Anode Stub Hole Dryer Tumbler	<20%	333.3 tons of thimbles
15	Anode Spray Nat Gas	NA	2.9 MCF of natural gas
	Anode Spray Al Melt Furnace	<20%	166.7 tons of aluminum
16	Spent Anode Cleaning	<20%	3,500 tons of bath material
17	Anode Butt Shot Cleaner	<20%	6,250.9 tons of anodes
18	Anode Butt Primary Crusher #1	<20%	6,250.9 tons of anodes
	Anode Butt Primary Crusher #2	<20%	6,250.9 tons of anodes
19	Anode Butt Secondary Crusher	<20%	6,250.9 tons of anodes
	Anode Butt Tertiary Crusher	<20%	6,250.9 tons of anodes
20	Crushed Butts Convey	<20%	6,250.9 tons of anodes
21	Anode Bar Stub Welding	<20%	1.1 tons of welding rod

**TABLE 2: (continued):**

<i>Emission point</i>	<i>Emission unit</i>	OPACITY	Process operational limits unit/month
22	Bath Reclaim Crusher	<20%	3,750 tons of reclaimed bath
	Bath Reclaim Screw Conveyor	<20%	3,750 tons of reclaimed bath
	Bath Reclaim Bucket Elevator	<20%	3,750 tons of reclaimed bath
	Bath Reclaim Conveyor	<20%	3,750 tons of reclaimed bath
	Bath Reclaim Screen	<20%	3,750 tons of reclaimed bath
28	2 Melt and flux furnaces	< 20%	*
29	76,000 lbs aluminum melt and hold furnace	< 20%	* (Maximum hourly aluminum charging shall not exceed 12.5 tons.)
32	Spent Potliner	<20%	625 tons of spent potliner
33	Shell Repair Weld	<20%	0.42 ton of welding rod
	Shell Repair Weld	<20%	0.42 ton of welding rod
34	Green Anode Conveying	<20%	18,083 tons of green anodes

\* Combined natural gas usage shall not exceed 185.3 million cubic feet for any consecutive 12 month period. Combined propane usage shall not exceed 150 thousand gallons for any consecutive 12 month period. Combined aluminum processing rate shall not exceed 23,167 tons per month.

**PERIODIC MONITORING:**

**Emission Group 1**

**Table 1.0**

<b>Emission Point</b>	<b>Construction/modification date</b>	<b>Description</b>	<b>Type of Control</b>	<b>Emission Limitations</b>	<b>Operation Limits / Month</b>
45 [21(N213)]	<b>1996</b>	Metal Processing Unit	<b>Baghouse</b>	—	N/A
36 [24(N240)]	<b>1994</b>	Oxy Fuel Furnace	<b>Baghouse</b>	<b>4.16 lb/hr</b>	<b>914.58 tons 3.5672 mmcf natural gas</b>
33 [25(N250-33)]	<b>1996</b>	Shell Repair Building	—	<b>2.34 lb/hr</b>	<b>0.42 tons welding rod</b>
47 [(47(01))]	<b>1999</b>	Anode Dust Conveyance System	—	—	N/A
01 [(N01-01)]	<b>1996</b>	Vacuum Unload ore & coke	<b>Baghouse</b>	<b>36.25 lb/hr</b>	<b>73000 tons coke/alumina</b>
01 [(N02-01)]	<b>1996</b>	Vacuum Unload ore & coke	<b>Baghouse</b>	<b>36.25 lb/hr</b>	<b>73000 tons coke/alumina</b>
01 [(N03-*)]	<b>1996</b>	Vacuum Unload ore & coke	<b>Baghouse</b>	<b>36.25 lb/hr</b>	<b>146000 tons coke/alumina</b>
02 [(N10-03)]	<b>1996</b>	Railroad unload station	<b>Baghouse</b>	<b>40.50 lb/hr</b>	<b>146000 tons coke/alumina</b>
03 [(N20-03)]	<b>1996</b>	Tower 5 Transfer Point	<b>Baghouse</b>	<b>40.50 lb/hr</b>	<b>146000 tons coke/alumina</b>
03 [(N21-04)]	<b>1996</b>	Tower 1 Transfer Point	<b>Baghouse</b>	<b>40.50 lb/hr</b>	<b>146000 tons coke/alumina</b>
6 [05(N50-06)]	<b>1996</b>	Coke Silo No.1	<b>Baghouse</b>	<b>40.50 lb/hr</b>	<b>146000 tons coke</b>
6 [05(N51-06)]	<b>1996</b>	Coke Silo No. 2	<b>Baghouse</b>	<b>40.50 lb/hr</b>	<b>146000 tons coke</b>
11 [09(N95-11)]	<b>1996</b>	<b>Baked Anode Cleaning</b>	<b>Baghouse</b>	<b>1.66 lb/hr</b>	<b>234.3 tons fluid coke</b>
14 [10(N100-14)]	<b>1996</b>	<b>Thimble Dust Hopper</b>	<b>Baghouse*</b>	<b>2.23 lb/hr</b>	<b>333.3 tons thimbles</b>
14 [10(N101-14)]	<b>1996</b>	<b>Thimble Tumbling Mills</b>	<b>Baghouse*</b>	<b>2.23 lb/hr</b>	<b>333.3 tons thimbles</b>

16 [10(N102-16)]	1996	Control Butt Cleaning	Baghouse	9.57 lb/hr	3500 tons bath
15 [11(N110-15)]	1996	Aluminum Melter and Baked Anode Sprayer	Cyclone	1.45 lb/hr	205 tons aluminum
10 [13(N130-10)]	1996	200 Ton Silo Pack Coke	Baghouse*	1.66 lb/hr	234.3 tons fluid coke
12 [13(N131-12)]	1996	Packed Coke waste (20 ton silo)	Baghouse*	1.66 lb/hr	234.3 tons fluid coke
18 [14(N140-18(01))]	1996	Anode Butt Primary Crusher #1 & #2	Baghouse	13.71 lb/hr	6250.9 tons anodes
19 [14(N142-19(01))]	1996	Anode Butt Secondary Crusher	Baghouse*	13.71 lb/hr	6250.9 tons anodes
19 [14(N143-19(02))]	1996	Anode Butt Tertiary Crusher	Baghouse*	13.71 lb/hr	6250.9 tons anodes
14(N145-*)	1996	Crushed Butt Storage Bin (2)	Baghouse	13.71 lb/hr	6250.9 tons anodes
17 [14(N146-17)]	1996	Anode Butt Shot Cleaner(2)	Baghouse	13.71 lb/hr	6250.9 tons anodes
21 [15(N150-21)]	1996	Anode Bar Stub Welding	—	2.34 lb/hr	1.1 ton welding rod
22 [17(N170-22(01))]	1996	Bath Reclaim Crusher	Baghouse*	9.99 lb/hr	3750 tons reclaimed bath
22 [17(N171-22(02))]	1996	Bath Reclaim Screw Conveyor	Baghouse*	9.99 lb/hr	3750 tons reclaimed bath
22 [17(N172-22(03))]	1996	Bath Reclaim Bucket Elevator	Baghouse*	9.99 lb/hr	3750 tons reclaimed bath
22 [17(N173-22(04))]	1996	Bath Reclaim Conveyor	Baghouse*	9.99 lb/hr	3750 tons reclaimed bath
22 [17(N174-22(05))]	1996	Bath Reclaim Conveyor	Baghouse	9.99 lb/hr	3750 tons reclaimed bath

22 [17(N175-22(06))]	1996	Bath Reclaim Screen	Baghouse*	9.99 lb/hr	3750 tons reclaimed bath
22 [17(N176-*)]	1996	100 ton Silo	Baghouse*	9.99 lb/hr	3750 tons reclaimed bath
22 [17(N177)]	1996	300 ton Silo	Baghouse*	—	N/A
22 [17(N179)]		7.5 ton Bath Reclaim Silo	Baghouse	—	N/A
33 [26(N250-33)]	1996	Spent Potliner Building	Baghouse	3.56 lb/hr	625 tons spent potliner
38 [30(N300)38]	1996	6 Alumina Storage Facilities	Baghouse	41.94 lb/hr	Combined 37950 tons of alumina
47 [47(02)]	1999	Anode Dust Storage Silo	Baghouse	2.34 lb/hr	N/A

### **APPLICABLE REGULATIONS**

401 KAR 59:010, New process operations

Self-imposed limitations supersedes the mass emission standards of 401 KAR 59:010

Compliance with the listed operation limits provides reasonable assurance that the particulate matter emission limitations (PM/PM<sub>10</sub>) are being met. The permittee shall monitor the amount and type of throughputs (specified in the table under operational limits) added to each emission unit during a calendar month. Additionally, the owner or operator shall follow the PM plan found in Appendix A. Excursions from the requirements of the PM plan shall be corrected within 24 hours; additional time may be granted for just cause.

Emission Group 2

Table 2.0

<b>Emission Point</b>	<b>Construction/ modification date</b>	<b>Description</b>
08(N90)	1969	Pitch Tank #1
08(N91)	1969	Pitch Tank #2
08(N92)	1969	Pitch Tank #3
35 [12(N120)]	1969	Cathode Heater – natural gas
	2002	2 – 2 Ton Induction Furnaces

### **APPLICABLE REGULATIONS:**

401 KAR 61:020, Existing process operations

401 KAR 59:010, New process operations (emission point 23 (N232))



Pursuant to Regulation 401 KAR 59:010

- a) Visible emissions shall not equal or exceed 20 percent opacity, as determined with Reference Method 9, Appendix A, 40 CFR 60.
- b) Hourly particulate emissions as measured by Reference Method 5 (if required), Appendix A, 40 CFR 60 averaged over the minimum specified time, shall not exceed the allowable as calculated by

$$E = 3.59P^{0.62}$$

Where E is the emissions in pounds per hour and P is the throughput in tons per hour.

Pursuant to Regulation 401 KAR 61:020:

- a) Visible emissions shall not equal or exceed 40 percent opacity, as determined with Reference Method 9, Appendix A, 40 CFR 60.
- b) Hourly particulate emissions as measured by Reference Method 5 (if required), Appendix A, 40 CFR 60, averaged over three hours or the minimum specified time, shall not exceed the limit calculated by the following formula:

$$E = 4.10 P^{0.67}$$

Where P is the process weight (total weight of all throughput materials introduced into the emission unit) in tons/hour. If the process weight equals or is less than 0.5 ton/hour, then the particulate matter emission limitation shall be 2.58 lbs/hr.

Emission Group 3

Table 3.0

<b>Emission Point</b>	<b>Construction/modification date</b>	<b>Description</b>	<b>Type of Control</b>
04 [(N30)]	1969	Alumina Silo 1a	Baghouse
04 [(N31)]	1969	Alumina Silo 1b	Baghouse
04 [(N32)]	1969	Alumina Silo 2a	Baghouse
04 [(N33)]	1969	Alumina Silo 2b	Baghouse
04 [(N34)]	1969	Alumina Silo 3a	Baghouse
04 [(N35)]	1969	Alumina Silo 3b	Baghouse
04 [(N36)]	1969	Alumina Silo 4a	Baghouse
04 [(N37)]	1969	Alumina Silo 4b	Baghouse
25 [04(N38)]	1969	Airveying to Alumina Silos	Vented to Potline Emission Control System
25 [04(N39)]	1969	Airveying to Alumina Silos	Vented to Potline Emission Control System
25 [04(N40)]	1969	100 ton Surge Silo	Baghouse
25 [04(N41)]	1969	100 Ton Surge Silo	Baghouse
26 [19(N190)]	1969	Limestone Unloading	Baghouse

**APPLICABLE REGULATIONS:**

401 KAR 61:020, Existing process operations

- a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall perform a qualitative visual observation of the opacity of emissions from each stack/vent on a weekly basis and maintain a log of the observation. The log shall note:
- 1) whether any air emissions (except for water vapor) were visible from the vent/stack,
  - 2) all emission points from which visible emissions occurred, and
  - 3) whether the visible emissions were normal for the process.
- b) To provide reasonable assurance that the particulate matter emission limitations are being met, the permittee shall monitor the monthly amounts and types of process weight added to each emissions unit. Excursions from the control equipment's operating ranges shall be promptly corrected.

**Emission Group 4****Table 4.0**

<b>Emission Point</b>	<b>Construction/modification date</b>	<b>Description</b>	<b>Operation Limits / Month</b>
01 [(N04)]	1996	Conveyor-barge to Tower 1	146000 tons coke
02 [(N11-*)]	1996	Conveyor- Railroad to Tower 5	146000 tons aluminum fluoride
03 [(N22-*)]	1996	Conveyor – Tower 1 & Tower 5	146000 tons coke
03 [(N23-*)]	1996	Conveyor – Tower 1 to alumina silos	146000 tons coke
03 [(N24-06)]	1996	Conveyor to coke silos	146000 tons coke
04 [(N42)]	1996	Alumina Handling Fugitives	N/A
11 [09(N96-11)]	1996	Baked Anode Dust Bin	234.3 tons fluid coke
09 [(N97-*)]	1996	Fluid Coke Dust Bin	234.3 tons fluid coke
21 [10(N103-*)]	1996	Anode Bar Stub Grinding	51.25 tons anode bars
21 [10(N104-*)]	1996	Anode Bar Stub Grinding	51.25 tons anode bars
20 [14(N144-20)]	1996	Crushed Butts Conveyor	6250.9 tons anodes
18 [14(N147-*)]	1996	Primary crushing Fugitives	6250.9 tons anodes
14(N148-*)	1996	Secondary Crushing Fugitives	6250.9 tons anodes
22 [17(N178-*)]	1996	Bath Reclaim Fugitives	3750 tons reclaimed bath
39 [39]	1996	Alumina Handling System	16792 tons of alumina
PR(-)	1996	0.4 Mile Plant Road (expansion)	N/A

28(N280)	—	Paved Roads	
28(N280)	—	Unpaved Roads	
42 [34(34)]	1999	Cooling Tower Fan Exhaust	N/A

### **APPLICABLE REGULATIONS:**

401 KAR 63:010, Fugitive emission

To provide reasonable assurance that the fugitive dust emissions will not be visible beyond the plant's property the permittee shall monitor the conditions of the roadways and other fugitive dust emission units and when appropriate take action to minimize dust.

42(-) Cooling Tower

### **APPLICABLE REGULATIONS:**

40 CFR 63 Subpart Q, National emission standards for hazardous air pollutants for industrial process cooling towers

The use of chromium based water treatment chemicals is prohibited.

The permittee shall monitor the chemicals put into the cooling tower water and maintain the corresponding MSDS for chemicals used.

## **18 (N180, N181)**

**Description:** Potlines 1-4 & roof monitors

**Primary aluminum reduction potlines**

**Center-worked prebake three (CWPB3) potlines**

**Combined maximum hourly rated capacity: 24.2 tons**

**Combined maximum yearly rated capacity: 212000 tons**

**Installation date: 1969**

**Control System: Wet scrubber system:**

**4 Multiclones**

**8 Electrostatic precipitators**

**12 Wet scrubbers**

### **APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National emission standards for hazardous air pollutants for primary aluminum reduction plant.

Regulation 401 KAR 61:165, Existing primary aluminum reduction plants.

401 KAR 61:020, Existing process operations (superceded by 40 CFR 63, Subpart LL).

To assure compliance with the visible emissions, semi-annual method 9 readings will be performed.

### **Compliance Demonstration:**

Compliance with the applicable monthly individual emissions of TF

$$E_p = [(C_{s1} \times Q_{sd})_1 + (C_{s2} \times Q_{sd})_2] / (P \times K) \quad \text{equation 1} \quad (63.847(e))$$

Where  $E_p$  is the emission rate of total fluorides from each potline in lb/ton,  $C_{s1}$  is the concentration of total fluorides from the primary control system in mg/dscf,  $Q_{sd}$  is the volumetric flow rate of effluent gas corresponding to the appropriate subscript location in dscf/hr,  $C_{s2}$  is the concentration of total fluorides as measured for roof monitor emissions in mg/dscf,  $P$  is the aluminum production rate in ton/hr,  $K$  is the conversion factor 453,600 mg/lb. The aluminum production rate ( $P$ ) shall be determined by dividing the number of hours in the calendar month into the weight of aluminum tapped during the calendar month that includes the three runs for a performance test.. 1 denotes the subscript for primary control system effluent gas, and 2 denotes the subscript for the roof monitors effluent gas. The concentration and volumetric flow rate for the primary control system shall be determined from the previous 12-month average of all performance test runs (63.848(a)). The concentration and volumetric flow rate for the roof monitor shall be determined using the monthly average from at least three performance test runs(63.848(a)) performed on each potline.

Compliance with the applicable monthly average emissions of TF listed above shall be determined using equation 1 except that the sum of emissions from each potline included in the group, determined separately using the numerator, is divided by the total aluminum production from all of the potlines comprising the group for the month. The monthly average emissions (in lb/ton) of secondary emissions (roof monitor) and TF from the primary control system for each potline shall be determined using test provisions specified below and calculated using the numerator in equation 1. At least three performance test runs per potline each month must be performed for the secondary emission. The results of the secondary emissions shall be combined with the TF results for the primary control system (s) and divided by the total aluminum production. Each potline's average hourly production rate shall be determine by dividing the number of hours in the calendar month into the weight of aluminum tapped during the calendar month that includes the three runs for a performance test. The average hourly production for the potlines comprising the group shall be combined to determine the total aluminum production.

Any potline, other than a reconstructed potline, that is changed such that its applicable subcategory also changes, shall meet the applicable emission limit in 40 CFR 63 §63.843(a)(1) for the original subcategory, center-worked prebake three (CWPB3), or the new subcategory, whichever is more stringent.

- a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall:
  - i) perform visual opacity readings on the stack or vent using Reference Method 9 on a semi-annual basis, or more frequently if requested by the Division. Opacity readings shall be conducted while the emission units are in operation.
  - ii) perform a qualitative visual observation of emissions from each stack/vent on a daily basis and maintain a log of the observation. The log shall note:
    - 1) whether any air emissions (except for water vapor) were visible from the vent/stack,
    - 2) all emission points from which visible emissions occurred, and
    - 3) whether the visible emissions were normal for the process.
  - iii) determine the opacity of emissions by Reference Method 9 if abnormal visible emissions are observed.
- b) To provide reasonable assurance that the particulate matter emission limitations are being met,

the permittee shall monitor the monthly amounts and types of process weight added to each emissions unit and the operating parameters of each control device. Excursions from the control equipment's operating ranges shall be promptly corrected as per the provisions of the Startup, Shutdown and Malfunction Plan.

Pursuant to 401 KAR 61:165:

The permittee shall maintain systems to determine the daily weight of aluminum produced.

The permittee shall maintain ambient air monitoring equipment for fluoride and monitor the raw material feed rates and cell or potline voltage.

Pursuant to 40 CFR 63 §63.848(a),

- a) The TF emissions from each potline shall be monitored through "monthly" performance tests specified in the testing requirement section and in 40 CFR 63 Subpart LL. TF emissions shall be computed and recorded using equation 1. "If a reduced sampling frequency is approved the TF emissions from each potline shall be monitored quarterly using the approved test schedule and methods. Compliance with TF emissions shall be computed and recorded quarterly using equation 1. If prior approval for alternative monitoring for similar potline has been granted monthly monitoring shall be performed using the approved alternative monitoring procedures to demonstrate compliance with the alternative emission limit for each similar potline as well monitoring one of the similar potlines using monthly performance tests to demonstrate compliance with the TF 2.5 lbs/ton of aluminum produced limit.  
A reduced sampling frequency has been requested for potlines 1,2 and 4. These potlines shall be monitored quarterly. Potline 3 shall remain under the monthly monitoring until a request for reduced sampling is submitted.
- b) The daily amount of aluminum tapped from the each potline shall be monitored and recorded. To determined the amount of aluminum tapped the owner or operator shall install, operate, and maintain a monitoring device. Calibration must be performed in accordance with the manufacturer's instructions.
- c) The owner or operator shall visually inspect the exhaust stack(s) of each control device on a daily basis for evidence of any visible emissions indicating abnormal operation.
- d) (1) The owner or operator shall maintain a continuous parameter monitoring system for each emission control device.  
(2) If the monitoring system for a primary control device measures an operating parameter outside the range required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the Startup, Shutdown, and Malfunction Plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.  
(3) If the range for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.
- e) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event.
- f) The TF emissions can be measured from one potline and monitor other similar potlines by alternative procedures provided the permittee demonstrates that the potlines are similar.

**P5 (37) Potline 5 & roof monitors**

**Description:**

**Primary aluminum reduction potline**  
**Center-worked prebake one (CWPB1) potline**  
**Maximum hourly rated capacity: 7.53 tons**  
**Maximum yearly rated capacity: 66000 tons**  
**Installation date: 1998**  
**Control Equipment: Dry alumina scrubber system**

**APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National emission standards for hazardous air pollutants for Primary Aluminum Reduction Plants.

401 KAR 59:010, New process operations

Self-imposed limitations supersedes the mass emissions standards prescribed by 401 KAR 59:010, New process operations.

Regulation 401 KAR 51:017, PSD applies to NO<sub>x</sub> carbon monoxide and sulfur dioxide emissions

**Compliance Demonstration:**

The following equation will be used to demonstrate compliance with the Subpart LL requirements (63.87(e)):

$$E_p = [(C_{s1} \times Q_{sd})_1 + (C_{s2} \times Q_{sd})_2] / (P \times K) \quad \text{Equation 1}$$

Where  $E_p$  is the emission rate of total fluorides from the potline in lb/ton,  $C_{s1}$  is the concentration of total fluorides from the primary control system in mg/dscf,  $Q_{sd}$  is the volumetric flow rate of effluent gas corresponding to the appropriate subscript location in dscf/hr,  $C_{s2}$  is the concentration of total fluorides as measured for roof monitor emissions in mg/dscf,  $P$  is the aluminum production rate in ton/hr,  $K$  is the conversion factor of 453,600 mg/lb, <sub>1</sub> denotes the primary control system effluent gas, and <sub>2</sub> denotes the secondary control system or roof monitor effluent gas. The aluminum production rate ( $P$ ) shall be determined by dividing the number of hours in the calendar month into the weight of aluminum tapped during the calendar month that includes the three runs for a performance test. The concentration and volumetric flow rate for the primary control system shall be determined from the previous 12-month average of all performance test runs (63.848(a)). The concentration and volumetric flow rate for the roof monitor shall be determined using the monthly average from at least three performance test runs (63.848(a)).

To provide reasonable assurance that the visible emission limitations are being met the permittee shall perform weekly visible emission readings on potline 5's roof monitors and stack using Reference Method 9.

- a) To provide reasonable assurance that the particulate matter emission limitations (PM/PM<sub>10</sub>) are being met, the permittee shall monitor the amount and type of operational throughput monthly added to each emission unit as specified above as well as conduct an annual performance test. The owner or operator shall *continuously* monitor the air flow rate and pressure drop across

the baghouses. Monthly particulate emissions shall be calculated for each emission as follows:

$$PE = (TP \times PEF) / 2000 \text{ lbs/ton}$$

Where PE = particulate emissions/PM<sub>10</sub> in tons emitted per month, TP = actual throughput (operation limit) in tons/month, and PEF = particulate emission factor in lbs/ton of throughput. The particulate emission factors shall be the number determined from the most recent compliance test required in the above Testing Requirement Section or other emission test or emission factors approved by the Division.

Pursuant to 40 CFR 63 §63.848(a),

- a) The TF emissions shall be monitored through “monthly” roof monitor performance tests specified in the testing requirement section and in 40 CFR 63 Subpart LL. TF emissions shall be computed and recorded using equation 1. If a reduced sampling frequency is approved the TF emissions from the roof monitors shall be monitored quarterly using the approved test schedule and methods. Compliance TF emissions shall be computed and recorded quarterly using equation 1.
- b) The daily amount of aluminum tapped shall be monitored and recorded. To determine the amount of aluminum tapped the owner or operator shall install, operate, and maintain a monitoring device. Calibration must be performed in accordance with the manufacturer’s instructions.
- c) The owner or operator shall visually inspect the exhaust stack(s) of each control device on a daily basis for evidence of any visible emissions indicating abnormal operation.
- d)(1) The owner or operator shall maintain a continuous parameter monitoring system for the emission control device. Unless prior written approval by DAQ for alternative control device operating parameters has been granted, the owner or operator shall, as a minimum, install for the dry alumina scrubbers devices for the measurement of alumina flow and air flow.
- (2) If a monitoring device for a primary control device measures an operating parameter outside the range(s) required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the startup, shutdown, and malfunction plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.
- (3) If the range for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.
- e) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event as provided for in 40 CFR 63.6(e)(3).

Monthly throughputs shall be monitored and recorded to assure compliance with the operational limits.

Aluminum production shall be recorded and monitored.

**Description:**

**Self-imposed monthly limit: 18,083 tons per month of green anodes**

**8,900 tons per month of packing coke**

**New carbon bake furnace installation date: 1999**

**Two existing carbon bake furnaces installed: 1969**

**Control equipment: dry alumina scrubber system:**

**APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National emission standards for hazardous air pollutants for Primary Aluminum Reduction Plants

401 KAR 59:010, New process operations applies to the visible emissions

Self-imposed limitations supersedes the mass emissions standards prescribed by 401 KAR 59:010

401 KAR 51:017, Prevention of significant deterioration of air quality (PSD) applies to carbon monoxide, NO<sub>x</sub> and sulfur dioxide emissions

**Compliance Demonstration:**

Compliance with the POM and TF emission rates shall be determined by the following equations:

For TF

$$E_b = (C_s \times Q_{sd}) / (P.B. \times K) \quad \text{equation 2}$$

where  $E_b$  is the emission rate of TF in lb/ton of green anodes produced;  $C_s$  is the concentration of TF in mg/dscf;  $Q_{sd}$  is the volumetric flow rate of effluent gas in dscf/hr; P.B. is the quantity of green anode material placed in the furnace in ton/hr; and K is the conversion factor of 453,600 mg/lb.

For POM

$$E_b = (C_s \times Q_{sd}) / (P.B. \times K) \quad \text{equation 3}$$

where  $E_b$  is the emission rate of POM in lb/ton of green anodes produced;  $C_s$  is the concentration of POM in mg/dscf;  $Q_{sd}$  is the volumetric flow rate of effluent gas in dscf/hr; P.B. is the quantity of green anode material placed in the furnace in ton/hr; and K is the conversion factor of 453,600 mg/lb.

The rate of green anode material introduced into the furnace ( $P.B.$ ) shall be determined by dividing the number of operating hours in the calendar month into the weight of green anode material used during the calendar month in which the performance test was conducted.

The permittee shall monitor and record the monthly fuel usage rates of natural gas and propane of the new and existing ovens separately.

- a) Monthly throughputs shall be monitored and recorded to assure compliance with the operational limitations found in the Description section.



- b) Sulfur contents of the coke and coal tar pitch shall be recorded and determined with an ASTM standard or alternative method each method shall be approved by the Division. The method used to determination sulfur content of coke shall assure that the average percent sulfur by weight of each shipment of coke will not exceed 3.0 percent. The percent sulfur by weight of the coal tar pitch shall be determined by weekly ASTM or alternative sampling of each of the coal tar pitch storage tanks.
- c) Annual performance testing as specified in the testing requirement section.
- d) Green anode monthly consumption and amount of aluminum produced shall be recorded and monitored. (Based on 30 consecutive days)
- e) Carbon bake furnaces' fuel usage rates of natural gas and propane and furnace finish temperature shall be recorded and monitored monthly. The existing and new furnaces natural gas consumption rate shall be monitored separately.
- f) Dry scrubber operational parameters as per the parametric plan shall be constantly monitored and any excursion shall be recorded.
- g) Records of the VOM contents of the coal tar pitch and petroleum coke shall be maintained.
- h) To provide reasonable assurance that the visible emission limitations are being met the permittee shall perform weekly visible emission readings on the carbon bake furnaces' primary control system stack using Reference Method 9. Additionally, compliance assurance will be provided by the periodic monitoring specified in 40 CFR 63 Subpart LL.
- i) To provide reasonable assurance that the particulate matter emission limitations (PM/PM<sub>10</sub>) are being met, the permittee shall monitor the amount and type of process throughput monthly added to each emission unit as well as conduct annual performance test. The owner or operator shall *continuously* monitor the air flow rate and pressure drop across the baghouses. Excursions from the control equipment's operating ranges shall be promptly corrected as per the Startup/Shutdown Malfunction Plan. Monthly particulate emissions shall be calculated for each emission unit as follows:

$$PE = (TP \times PEF) / 2000 \text{ lbs/ton}$$

Where PE = particulate emissions/PM<sub>10</sub> in tons emitted per month, TP = actual throughput (operation limit) in tons/month, and PEF = particulate emission factor in lbs/ton of throughput. The particulate emission factors shall be the number determined from the most recent compliance test required in the above Testing Requirement Section or other emission test or emission factors approved by the Division.

- j) Using the procedures in §63.847, in the approved test plan, and in the test requirement section above the owner or operator shall monitor TF and POM emissions from each anode bake furnace on an annual basis.
- k) The amount of green anode material place in the furnace shall be monitored and recorded. The weight may be determined by monitoring the weight of all anodes or by monitoring the number of anodes placed in the furnace and determining an average weight from measurements of a representative samples of anodes.
- l) The owner or operator shall visually inspect the exhaust stack of the control device on a daily basis for evidence of any visible emissions indicating abnormal operation.
- m)(1) The owner or operator shall install, operate, calibrate (performed in accordance with the

manufacturer's instructions), and maintain a continuous parameter monitoring system for each emission control device. Unless prior written approval by DAQ for alternative control device operating parameters has been granted, the owner or operator shall, as a minimum, install for the dry alumina scrubbers devices for the measurement of alumina flow and air flow.

- (2) If a monitoring device for a primary control device measures an operating parameter outside the limit(s) required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the startup, shutdown, and malfunction plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.
  - (3) If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.
- n) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event.

## **Green Carbon Anode Production and Handling**

### **Emission Group: Dry Circuit**

**Table 5.0**

<b>Emission Point</b>	<b>Construction/modification date</b>	<b>Description</b>	<b>Type of Control</b>	<b>Emission Limitations</b>	<b>Operation Limits / Month</b>
<b>8 [07(N80-08(01))]</b>	<b>1996</b>	<b>Green Carbon Roll Crusher</b>	<b>Baghouse*</b>	<b>26.64 lb/hr</b>	<b>15,512/tons</b>
<b>8 [07(N81-08(02))]</b>	<b>1996</b>	<b>Green Carbon Bucket Elevator</b>	<b>*</b>	<b>26.64 lb/hr</b>	<b>15,512/tons</b>
<b>8 [06(N61-07)]</b>	<b>1996</b>	<b>Transfer Tower</b>	<b>*</b>	<b>15.09 lb/hr</b>	<b>15,512/tons</b>
<b>8 [06(N62-07)]</b>	<b>1996</b>	<b>Carbon Conveyor</b>	<b>*</b>	<b>15.09 lb/hr</b>	<b>15,512/tons</b>
<b>7 [06(N63-07)]</b>	<b>1996</b>	<b>Fines Collector</b>	<b>*</b>	<b>15.09 lb/hr</b>	<b>15,512/tons</b>
<b>7 [06(N60) 07]</b>	<b>1996</b>	<b>10 ton Ballmill</b>	<b>Baghouse</b>	<b>15.09 lb/hr</b>	<b>7300 tons of coke/pitch</b>
<b>40 [32(N320) 40]</b>	<b>1996</b>	<b>15 ton Ballmill</b>	<b>Baghouse</b>	<b>19.41 lb/hr</b>	<b>10950 tons of coke/pitch</b>

8 [06(N64-07)]	1996	Fraction Bins and Feeder	*		15,512/tons
8 [06(N65-*)]	1996	Dust from Internal Conveyors	*		15,512/tons
8 [06(N66-*)]	1996	Dust from Internal Conveyors	*		15,512/tons
8 [06(N67-07)]	1996	Double-roll Crushing	*	15.09 lb/hr	15,512/tons
8 [06(N68-*)]	1996	Conveyor Vent	*		15,512/tons
8 [06(N69-*)]	1996	Green Carbon Conveyor to Carbon Bake Cranes (multi-purpose conveyor)	*		15,512/tons

**\*All sources to a common Baghouse**

#### **Emission Group: Hot Circuit**

**Table 6.0**

<b>Emission Point</b>	<b>Construction/ modification date</b>	<b>Description</b>	<b>Type of Control</b>	<b>Emission Limitations</b>	<b>Operation Limits / Month</b>
34 [16(N160)]	1996	Anode Vibrator Press	Dry Coke Scrubber		N/A
34 [16(N161)]	1996	Green Anode Conveying			N/A
34 [07(N83)]	1996	Hot Anode Paste Conveyor	Dry Coke Scrubber		N/A
34 [07(N84)]	1996	Green Mix Reject Piles	Dry Coke Scrubber		N/A
34 [07(N85-08(03))]	1996	Green Carbon Handling	Dry Coke Scrubber		18250 tons coke/pitch
08(N93)	1996	Pitch day tank	Carbon Absorber		2583 tons/month pitch

#### **Description**

**Raw material: coke, pitch, and recycled anodes and butts**

**Maximum monthly rated capacity of green anodes: 18,250 tons (self-imposed)**

**Maximum yearly rated capacity of green anodes: 219,000 (self-imposed)**

**Installation date: 1996**

#### **APPLICABLE REGULATIONS:**

Regulation 40 CFR Part 63 Subpart LL, National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants.

401 KAR 59:010, New process operations

The permittee must operate a dry coke scrubber.

Pursuant to 401 KAR 59:010:

- a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall:
  - i) perform quarterly, or more frequently if requested by the Division, opacity reading from each stack or vent using Reference Method 9. Opacity readings shall be conducted while the emission units are in operation.
  - ii) Perform weekly qualitative visual observation of the opacity of emissions from each stack/vent and maintain a log of the observation. The log shall note:
    - 1) whether any air emissions (except for water vapor) were visible from the vent/stack,
    - 2) all emission points from which visible emissions occurred, and
    - 3) whether the visible emissions were normal for the process
  - iii) determine the opacity of emissions by Reference Method 9 if abnormal visible emissions are observed.
- b) Compliance with the listed operational limits provides reasonable assurance that the particulate matter emission limitations (PM/PM<sub>10</sub>) are being met. The permittee shall monitor the amount and type of throughputs added to each emission unit during a calendar month. Additionally, the owner or operator shall monitor once a month the air flow rate and pressure drop across the baghouses while the emission unit is operating. Excursions from the control equipment's operating ranges shall be corrected within 24 hours; additional time may be granted for just cause.

Pursuant to 40 CFR 63 Subpart LL:

- a) The owner or operator shall maintain a continuous parameter monitoring system for each emission control device. A description of the parameters to be monitored, the operating limits, and the monitoring frequency to ensure that the control devices are being properly operated and maintained, and an explanation of the criteria used for their selection and how they relate to the emission control shall be submitted. Unless prior written approval by DAQ for alternative control device operating parameters has been granted, devices for the measurement of coke flow and air flow shall be installed for the dry coke scrubbers.
- b) The owner or operator shall visually inspect the exhaust stack(s) of each control device on a daily basis for evidence of any visible emissions indicating abnormal operation.
- c) If a monitoring device for a primary control device measures an operating parameter outside the limit(s) required to be established pursuant to §63.847(h), or if visible emissions indicating abnormal operation are observed from the exhaust stack of a control device during a daily inspection, the owner or operator shall initiate the corrective action procedures identified in the startup, shutdown, and malfunction plan within 1 hour. Failure to initiate the corrective action procedures within 1 hour or to take the necessary corrective actions to remedy the problem is a violation.
- d) If the limit for a given operating parameter associated with monitoring a specific control device is exceeded six times in any semiannual reporting period, then any subsequent

exceedance in that reporting period is a violation. For the purpose of determining the number of exceedances, no more than one exceedance shall be attributed in any given 24-hour period.

- e) The owner or operator shall monitor the actions taken during any startup, shutdown, and malfunction event.

## **21(N214-46)**

**Description:** Molten metal inline degassing unit with a capacity of 40,000 pounds per hour with a scrubber for control

Construction commenced: March 2001

### **APPLICABLE REGULATIONS:**

401 KAR 59:010, New process operations

40 CFR 63 Subpart RRR, National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production

### **Compliance Demonstration Method:**

To determine compliance with the HCL and PM emissions the following equation will be used:

$$E = (C * Q * K_1) / P$$

Where E = Emission rate of PM or HCl (lb/ton)

C = Concentration of PM or HCl (gr/dscf)

Q = Volumetric flow rate of exhaust gases(dscf/hr)

K<sub>1</sub> = Conversion factor, 1 lb/7,000 gr; and

P = Production rate, ton/hr

The permittee shall monitor the weight of feed or charge and develop an operation, malfunction and maintenance plan. Labels shall be inspected once per month to ensure that they are intact and legible. The total reactive flux injected must be monitored for each operating cycle as specified in 63.1510(j)

## **Group 5**

### **21(N210,N211,N212)**

**Description:** Aluminum casting furnaces 1 and 3

Construction modification: 1996

### **22(N220)**

**Description:** Aluminum casting furnace 4

Construction modification: 1996

### **APPLICABLE REGULATIONS:**

401 KAR 59:010, New process operations

40 CFR 63 Subpart RRR, National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production becomes applicable on March 24, 2003.

**Compliance Demonstration Method:**

To determine compliance with the HCL and PM emissions the following equation will be used:

$$E = (C * Q * K_1) / P$$

Where E = Emission rate of PM, HC, or D/F, lb/ton of feed

C = Concentration of PM, HCL, or D/F (gr/dscf)

Q = Volumetric flow rate of exhaust gases (dscf/hr)

K<sub>1</sub> = Conversion factor, 1 lb/7,000 gr; and

P = Production rate, ton/hr

- a) To provide reasonable assurance that the visible emission limitations are being met the permittee shall:
  - i) perform quarterly, or more frequently if requested by the Division, opacity reading from each stack or vent using Reference Method 9. Opacity readings shall be conducted while the emission units are in operation. (if reactive flux used)
  - i) Perform weekly qualitative visual observation of the opacity of emissions from each stack/vent and maintain a log of the observation. The log shall note:
    - 1) whether any air emissions (except for water vapor) were visible from the vent/stack,
    - 2) all emission points from which visible emissions occurred, and
    - 1) whether the visible emissions were normal for the process
  - ii) determine the opacity of emissions by Reference Method 9 if visible emissions from any stack/vent is perceived or believed to exceed the applicable standard.

Compliance with the listed operation limits provides reasonable assurance that the particulate matter emission limitations (PM/PM<sub>10</sub>) are being met. The permittee shall monitor the amount and type of throughputs (specified in the table under operational limits) added to each emission unit during a calendar month.

The permittee must comply with the appropriate monitoring in 40 CFR 63.1510.

**CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.